L 22147-66
ACC NR: AP6012951 0

Mw in the condensation and 120 Mw in the heating regimes, although the generators being used with it are capable of only 100 Mw. Detailed recommendations for improving the operational characteristics of the equipment and increasing reliability are published in Elektricheskiye Stantsii, no. 1, 1965 (article by Komarov, Pechenkin, Bunin, and Ruzankov). Orig. art. has: 10 figures and 2 tables. [JPRS]

SUB CODE: 10 / SUBM DATE: none / ORIG REF: 003

Card 2/2 dda

L 27851-66 EWP(e)/EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b) IJP(c) JD/WW/JG/WH

ACC NR: AP6000785 UR/0096/65/000/009/0044/0047

AUTHOR: Gorshkov, A.S.(Doctor of Tech.Sci.); Loginov, A.A.(Engineer); Sokolov, Ye. Ya.(Doctor of Tech.Sci.;Professor)

ORG: VTI; MEI

TITLE: Prospects for atomic heat and power plants

SOURCE: Teploenergetika, no.9, 1965, 44-47

TOPIC TAGS: atomic energy plant equipment, nuclear power plant, sea water desalting

ABSTRACT: The article is an analysis of the conditions necessary for the creation of atomic heat and power plants and nuclear salt water distillation plants. After a brief review of the present power and heat system in the Soviet Union, the authors present proposed schemes for plants of the above types. The article has two figures. The first shows the thermal scheme of an atomic heat and power plant with a uranium-graphite reactor and a 50,000 kilowatt turbine, together with the connection to a regional heat supply system. The second figure shows the scheme of a nuclear salt water distillation unit with a uranium-graphite reactor and a back-pressure turbine. This plant has

Card 1/2 UDC: 621.311.25.001.8

L 27851-66

ACC NR: AP6000785 O

a design capacity of 840 thousand kilowatts of electric power and 16 thousand cubic meters per hour of fresh water. It is predicted that the share of small electric power plants in the overall power balance of the country during the next 10 to 15 years will be about 5%. This means that electric power requirements on the order of 15 million kilowatts will be supplied by small atomic electric power plants. It is also predicted that, along with their use for heat supply, nuclear reactors will find wide application for salt water distillation in regions which are deficient in drinking and industrial water. Orig. art. has: 2 figures.

SUB CODE: 18,13 SUBM DATE: 00 ORIG REF: 006 OTH REF: 000

Card 2/2

SOKOLOV, Ya., sud'ya respublikanskoy kategorii; NAZAROV, A., sud'ya respublikanskoy kategorii

At Moscow in the fall... Kryl. rod. 15 no.12:26 D '64.
(MIRA 18:3)

KUMANIN, V.; RYVKIN, P.; KHODKEVICH, E.; SOKOLOV, Yu.; KOSTENKO, I.; KUPFER, M.; VASIL'YEV, A.; POSTNIKOV, Yu.; TARAKANOV, A.

More attention to plane modelina as a sport; letter to the editor. Kryl.rod. 5 no.12:16 D '54. (MLRA 7:12)
(Airplanes--Models)

SOKOLOV, Yu., master sporta.

Adjusting glider models. Kryl.rod. 7 no.5:15 My '56. (MLRA 9:8)
(Gliders (Aeronautics)--Models)

PHASE I BOOK EXPLOITATION SOV/4020

Aviamodelizm; sbornik statey. Posobiye dlya rukovoditeley aviamodel'-nykh kruzhkov i uchiteley (Aircraft Modeling; Collection of Articles. Textbook for Instructors of Model Aircraft Clubs and Teachers) Moscow, Uchpedgiz, 1960. 141 p. 12,000 copies printed.

Compilers: E.B. Mikirtumov, Candidate of Technical Sciences, and M.S. Lebedinskiy, Candidate of Technical Sciences; Ed.: A.Ye. Stakhurskiy; Tech. Ed.: V.I. Korneyeva.

PURPOSE: This book is intended for instructors and directors of model airplane clubs sponsored by DOSAAF (All-Union Voluntary Society for Promotion of the Army, Navy, and Air Force).

COVERAGE: The book consists of 47 articles covering various aspects of model aircraft design, construction and operation. The text contains many illustrations and diagrams. No personalities are mentioned. There are 185 references, all Soviet.

TABLE OF CONTENTS:

SOKOLOV, Yu., master sporta

Unusual towing hook. Kryl.rod. 13 no.1:25 Ja '62. (MIRA 15:2)

(Gliders(Aeronautics))

SOKOLOV, Yu., master sporta

Airplane models for the world championship. Kryl.rod. 13 no.2:24-25 F '62. (MIRA 15:1)

(Airplanes—Models)

SOKOLOV, Yu.

People of winged profession. Grazhd. av. 19 no.11:24-25 N '62.
(MIRA 16:1)

1. Starshiy redaktor otdela TSentral'noy telestudii.

(Television in aeronautics)

SOKOLOV, Yu., inzh., mastar sporta

How to build an engine with small cylinder capacity. Kryl. rod. 16 no.8:insert 1-3 Ag '64. (MIRA 18:10)

1. Moskovskiy aviamodel'nyy klub.

SOKOLOV, Yu., master sporta

Dispute of the strongest. Kryl. rod. 16 no.9:28-29 S '65.
(MIRA 18:12)

1. Starshiy trener sbornoy komandy SSSR.

KARPOV, L.; SOKOLOV, Yu.

Intermediate motor-vehicle models of the Minsk Automobile Plant.
Av.transp. 40 no.7:45-47 Jl '62. (MIRA 15:8)
(Minsk—Automobile industry)

SOKOLOV, Yu.; KHORIN, A.

Tractor trains for bitumen transportation. Avt.transp. 40 no.11:41-42 N '62. (MIRA 15:12)

1. Nauchnyy avtomotornyy i avtomobil'nyy institut.
(Tractor trains)

SOKOLOV, Yu.; KHORIN, A.

Heavy three-axle trailer for building-unit transportation. Avt. transp. 41 no.1:45-46 Ja '63. (MIRA 16:2)
(Truck trailers)

YEGIAZAROV, I.; SOKOLOV, Yu.

Standardization of tanks mounted on motortrucks and trailers.
Avt. transp. 41 no.5:41-42 My '63. (MIRA 16:10)

(Tank trucks--Standards)

PERLIN, I.L., professor; SOKOLOV, Yu.A., inzhener.

Longitudinal profile of diamond dies for mylybdenum wire. TSvet. met. 26 no.2:65-69 Mr-Ap '53. (MLRA 10:9)
(Wire drawing)

SOKOLOV, Yu. A.

USSR

Relation between parameters of saturated vapors of pure liquids. Yu. A. Sokolov. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 130, Ser. Energet.*, Nos. 4/5, 50-63(1954)(in Russian).—By supposition of the ideal and van der Waals (I) equations it is shown that for pure liquids $\ln (P/T) = -(a/Rv')(1/T) + \text{const.}$, where P is vapor pressure at satn.; T, abs. temp.; R, gas const.; v', liquid vol.; a, const. in I; and it is assumed that v' is independent of T, and coeffs. in I are functions of T and not of vol. The equation permits detn. of a from the slope of the P vs. T curve if the vol. and crit. T of the liquid are known. The relation can be converted to a dimensionless form and used to construct the boiling curves of pure liquids up to T close to the crit. point.

Andrew Dravnieks

Sokolov, Yu. A.

USSR

Inversion phenomena in real gases. Yu. A. Sokolov. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 130, Ser. Energet.* Nos. 4/5, 65–77(1954)(in Russian).—Existence of 3 types of inversion effects is indicated by a thermodynamic analysis of equations describing the behavior of real gases. The sequence and the signs of these effects are discussed. It is proposed that there should exist conditions where temp. of real gases would increase at expansion of highly compressed gases into vacuum. Confirmation of predicted variations of 3 dimensionless thermal coeffs. with pressure is found in behavior of N at several thousand atm. between −75 and 200°. Andrew Dravnieks

BD MET

The Second All-Union Conference on Rhenium, sponsored by the Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR, and the State Institute of Rare Metals, was held in Moscow 19-21 November 1962. A total of 335 representatives from 83 scientific institutions and industrial establishments participated. Among the reports presented were the following: autoclave extraction of Re from Cu concentrates (A. P. Zelikman and A. A. Peredereyev); Re extraction from the gaseous phase (V. P. Savrayev and N. L. Peysakhov); recovery of Re by sorption and ion interchange (V. I. Bibikova, V. V. Il'ichenko, K. B. Lebedev, G. Sh. Tyurekhodzhayeva, V. V. Yermilov, Ye. S. Raimbekov, and M. I. Filimonov); production of carbonyl Re (A. A. Ginzburg); electrolytic production of high-purity Re and electroplating with Re (Z. M. Sominskaya and A. A. Nikitina); Re coatings on refractory metals produced by thermal dissociation of Re chlorides (A. N. Zelikman and N. V. Baryshnikov); plastic deformation and thermomechanical treatment of Re (V. I. Karavaytsev and Yu. A. Sokolov); growth of Re single crystals and effect of O_2 on their properties (Ye. M. Savitskiy and G. Ye. Chuprikov); Re-Mo, Re-W, and Re—precious-metal alloys (Ye. M. Savitskiy, M. A. Tylkina, and K. B. Povarova); synthesis of Re nitrides, silicides, phosphides, and selenides (G. V. Samsonov, V. A. Obolonchik, and V. S. Neshpor); weldability of Re-Mo and Re-W alloys (V. V. D'yachenko, B. P. Morozov, and G. N. Klobanov); new fields of application for Re and Re alloys (M. A. Tylkina and Ye. M. Savitskiy); and Re-Mo alloy for thermocouples (S. K. Danishevskiy, Yu. A. Kocherzhinskiy, and G. B. Lapp). [WW]

Tsvetnyye metally, no. 4, Apr 1963, pp 92-93

ACCESSION NR: AP4011290 S/0136/64/000/001/0066/0069

AUTHOR: Natapova, R. I.; Kirsanova, T. A.; Malikova, L. P.; Sokolov, Yu. A.; Parusnikov, V. N.

TITLE: Cold drawing of tantalum wire

SOURCE: Tsvetny*ye metally*, no. 1, 1964, 66-69

TOPIC TAGS: tantalum wire, tantalum wire drawing, tantalum copper plating, cold drawing, wire drawing, copper plated tantalum wire

ABSTRACT: A method for smooth drawing of tantalum wires (Authors certificate Nr. 148373) was devised to eliminate wire rupture and gas absorption by the metallic wires which cause the wire to possess poor mechanical properties. Since the use of ordinary lubricants and oxidizing of the metal surface does not eliminate these difficulties, it is proposed that the tantalum material after cleaning be copper plated by hot dipping in an inner atmosphere. Hot-drawn wire was cleaned of aquadag and oxides by electrolytic etching. Hot copper plating of

Card 1/2

ACCESSION NR: AP4011290

the cleaned wire was done in argon by drawing the wire through a graphite crucible with molten copper. Rate of drawing and temperature must be strictly controlled for uniform coating. The latter is uniformly deformed during cold drawing and does not peal off. Cold drawing of 100-200 micron diam. wire(coating 1-2 microns) to a maximum size of 40-60 microndiam. can be achieved. For drawing to finer wires electrolytic copper plating should be superimposed thereon (100-200 micron diam primary wire 10-20 micron diam final wire, 3-5 micron coating achieved in two passages at a rate of 1.5-2 m/min, 20sec. in the bath, 20 amp/sq.in. current density). Electrolytic coating should be applied over etched hot coating for better uniformity and smoother drawing of small gauge wires. After drawing, coating should be electrolytically or chemically removed. Thus, perfect cold drawing of finest gauges becomes possible due to copper plating. Rate of drawing ranges from 20-15 m/min for 30-250 micron diam to 8-2 m/min- for 10-30 micron diam. Orig. art has: 3 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: EL NO REF SOV: 005 OTHER: 002

Card 2/2

ACCESSION NR: AT4014068 S/3072/63/000/000/0160/0167

AUTHOR: Sokolov, Yu. A.; Volkov, V. P.; Veyler, S. Ya.

TITLE: The influence of lubricants on the wear resistance of the diamond dies used during the drawing of molybdenum wire

SOURCE: Fiz.-khim. zakonomernosti deystviya smazok pri obrabotke metallov davleniyem. Moscow, Izd-vo AN SSSR, 1963, 160-167

TOPIC TAGS: lubricant, wear resistance, die diamond, die, wire drawing, molybdenum, molybdenum wire

ABSTRACT: The authors studied the influence of different lubricants such as sulfofrezol, graphite, paraffin, cetyl alcohol, lanolin, stearic acid, oleic acid, boric nitride and others on the durability of the diamond die during cold drawing of molybdenum wire. The wear to the diamond die is many times greater when the metal is not heated. Sulfofrezol appeared to be the best lubricant for cold drawing. However, even when it was applied, the wear to the die was still seven times greater than when drawing was performed after heating the metal and applying as a lubricant, a colloidal aqueous solution of graphite. It has also been suggested that molybdenum wire be drawn after covering its

Card 1/2

ACCESSION NR: AT4035117 S/3092/63/000/001/0193/0203

AUTHORS: Maly*shev, I. F.; Popkovich, A. V.; Fefelov, P. A.; Sokolov, Yu. A.

TITLE: Vacuum chambers for strong focusing synchrotrons

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury*: Elektrofizicheskaya apparatura; sbornik statey, no. 1, 1963, 193-203

TOPIC TAGS: cyclic accelerator, electron accelerator, proton accelerator, electron synchrotron, proton synchrotron, strong focusing accelerator, vacuum equipment

ABSTRACT: Some designs of vacuum chambers for strong-focusing accelerators, developed in recent years in NIIEFA, are described. The description is preceded by an exposition of the requirements imposed on the design of accelerator vacuum chambers with respect to the

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ACCESSION NR: AT4035117

uniformity of the field, injection energy, injection geometry, desired intensity, the chamber aperture, the required vacuum, the materials, and other factors. This is followed by a description of the 7-BeV proton synchrotron and the 6-BeV proton synchrotron vacuum chamber and their individual parts. The 7-BeV proton synchrotron vacuum chamber consists of a ring about 80 mm in diameter having 112 curvilinear sections placed in the gaps of the magnet blocks, and 112 straight-line sections between the blocks. The main elements of the ring are the curved sections, the majority of which constitute thin corrugated tubes of elliptical cross section with flanges welded on the end. Each tube is approximately 2 meters long, has inside dimensions 84 x 114 mm (axes of the ellipse), and is made of 1Kh18N9T stainless steel 3 mm thick, the corrugations being 3 mm high at a spacing of 7 mm. The 6-BeV electron synchrotron chamber is a ring approximately 70 meters in diameter, consisting of 48 curvilinear sections and 48 straight-line sections. Each curvilinear section (radius of curvature ~25 meters) is approximately

Card 2/3

ACCESSION NR: AT4035117

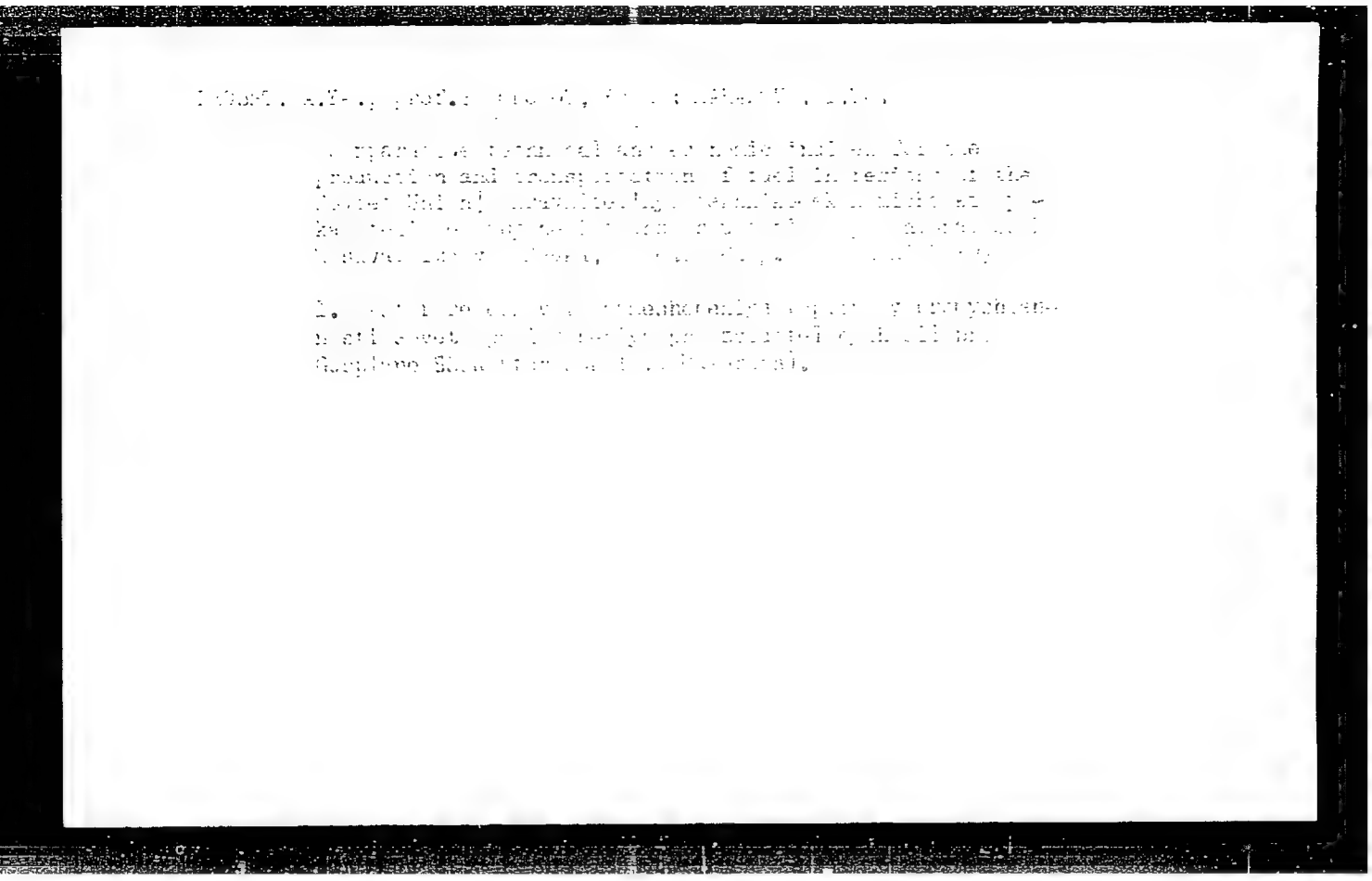
3.8 meters long and has inside dimensions 44 x 120 mm. The tube is 1.5 mm thick and is not corrugated. The forms used to shape the vacuum chamber tubes are described, along with the vacuum systems. Orig. art. has: 8 figures and 2 formulas.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 07May64 ENCL: 00

SUB CODE: NP NR REF SOV: 004 OTHER: 003

Card 3/3



15-1957-3-3084

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 3, p 94 (USSR)

AUTHOR: Sokolov, Yu. A.

TITLE: Staurolite from the Southeastern Shore of Lake Uvil'dy (Stavrolit s yugo-vostochnogo berega oz. Uvil'dy)

PERIODICAL: Tr.Sverdl. gorn. in-ta, 1956, Nr 26, pp 122-124

ABSTRACT: Staurolite has been found in argillaceous-siliceous shales, chiefly near quartz veins, on the southeastern shore of Lake Uvil'dy. The mineral occurs in the rocks as single crystals and, more rarely, as oblique cruciform twins. The simple forms m /$\bar{1}$10/, r /$\bar{1}$01/, b /0$\bar{1}$0/ and, very rarely, c /00$\bar{1}$/ have been observed. The cruciform twins make up about 20% of all the crystals studied. They are

Card 1/2

Staurolite from the Southeastern Shore of Lake Uvil'dy

all "oblique crosses," with (232) as the composition plane. The color of the staurolite ranges from light brown to black; the luster is vitreous, the fracture flat-conchoidal, and the hardness 7. The mineral shows distinct pleochroism: Ng brownish yellow, Nm light yellow, and Np colorless. The staurolite contains numerous inclusions of carbonaceous matter, quartz, rare euhedral crystals of garnet, and small grains of magnetite. Some staurolite crystals are shattered and transverse fractures may be seen in them, filled with quartz and leaves of mica. Under the microscope individual crystals of staurolite show wavy extinction and curved bands of carbonaceous material.

E.S.K.

VERTUSHKOV, G.N.; SOKOLOV, Yu.A.

Plumbolimonite and pyromorphite from Upper Ufaley in the Urals.
Zap. Vses. min. ob-va 87 no.1:96-100 '58. (MIRA 11:6)

1. Kafedra mineralogii Sverdlovskogo gornogo instituta.
(Ufaley Range—Lead ores)

YAROSH, P.Ya.; SOKOLOV, Yu.A.

Sericite pseudomorphs on topazes from pegmatite veins of the Rezha region in the Urals. Trudy Gor.-geol. inst. UFAN SSSR no. 35:309-311 '60. (MIRA 14:1)
(Rezha Valley--Sericite) (Topaz)

FOMINYKH, V.G.; YUNIKOV, B.A.; SOKOLOV, Yu.A.

Maghemite in titanomagnetite ores in the Lesser Kuybas deposit of the Southern Urals. Izv.vys.ucheb.zav.; geol. i razv. 6 no.11:69-72 N '63. (MIRA 18:2)

1. Institut geologii Ural'skogo filiala AN SSSR i Sverdlovskiy gornyy institut im. V.V.Vakhrusheva.

SOKOLOV, Yu.A.

Cummingtonite from amphibolites of the Kurtinskoye iron-titanium ore deposit. Trudy Inst. geol. UFAN SSSR no.70:79-82 '65.

Results of the thermographic study of hematite and some other minerals in the Fe_2O_3 — $FeTiO_3$ system. Ibid.:83-89
(MIRA 18:12)

L 04278-67 EWT(m)/T DJ

ACC NR: AP6013266 (A) SOURCE CODE: UR/0413/66/000/008/0057/0057

AUTHORS: Luk'yanchenko, B. S.; Sokolov, Yu. A.; Gagua, V. D.

38
B

ORG: none

TITLE: Friction bearing. Class 27, No. 180728 [announced by Central Scientific Research Diesel Institute (Tsentral'nyy nauchno-issledovatel'skiy dizel'nyy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 8, 1966, 57

TOPIC TAGS: antifriction bearing, lubrication

ABSTRACT: This Author Certificate presents a friction bearing for high-speed machinery, such as turbocompressors for internal combustion engines with a gas turbine supercharger. The bearing contains a floating bushing placed in the bed of the bearing, and also internal and external (in respect to the bushing) wedge-shaped oil-carrying recesses. To simplify its production, the external wedge-shaped oil recesses are formed on the external surface of the bushing (see Fig. 1).

Card 1/2 UDC: 621.822.5

L 04278-67

ACC NR: AP6013266

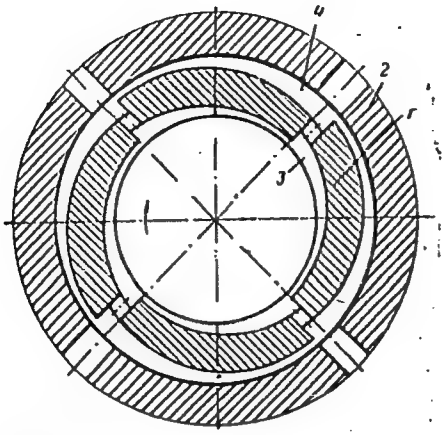


Fig. 1. 1 - floating bushing; 2 - bed of the bearing; 3 - internal wedge-shaped oil recesses; 4 - external wedge-shaped oil recesses

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 29Mar65/

Card 2/2

L 37691-66 EWT(m)/T WW/DJ

ACC NR: AP6021821 (A,N) SOURCE CODE: UR/0413/66/000/012/0113/0114

INVENTOR: Sokolov, Yu. A.; Gagua, V. D.; Khrushchevskiy, A. M.

ORG: none

TITLE: Sliding bearing. Class 47, No. 182969 [announced by Central Scientific-Research Diesel Institute (Tsentral'nyy nauchno-issledovatel'skiy dizel'nyy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 12, 1966, 113-114

TOPIC TAGS: bearing, sliding bearing

ABSTRACT: This Author Certificate introduces a sliding bearing consisting of a housing and a floating bushing with v-shaped indentations on their inner surfaces.

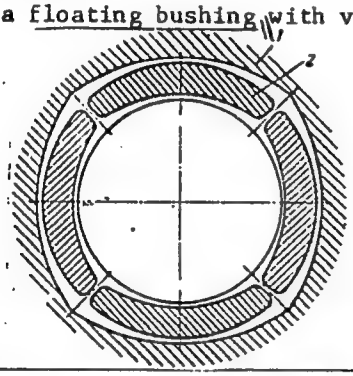


Fig. 1. Sliding bearing

1 - Bearing housing; 2 - bushing.

Card 1/2 UDC: 621.822.5

L 37691-66

ACC NR: AP6021821

For improving the self-alignment of the bushing and its operation, the bushing is built up sectionally. Orig. art. has: 1 figure. [SA]

SUB CODE: 13/ SUBM DATE: 15Feb65/ ATD PRESS: 5041

SOKOLOV, Yu.B.

DUVANOV, Pavel Antonovich; SOKOLOV, Yu.B., inzhener, redaktor; SHNEYDER, Ye.B., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy redaktor

[For high brick production from ring kilns] Za vysokie s"emy kirpicha s kol'tsevykh pechei. Pod red. IU.B.Sokolova. Moskva, Gos. izd-vo lit-ry po stroitel'nym materialam, 1954. 62 p. (MIRA 8:7)
(Brickmaking) (Kilns)

BELOV, V.I.; KINZBURGSKIY, I.B.; SOKOLOV, Yu.B., nauchnyy red.; GRINBERG, S.M., red.; GARNUKHINA, L.A., tekhn.red.

[Ceramic building materials of great utility; practices of the Tallinn and "Azeri" brick factories] Effektivnaia stroitel'naia keramika; iz opyta raboty kirpichnykh zavodov Tallinskogo i "Azeri." Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1957. 51 p. (MIRA 12:2)

(Estonia--Ceramics)

UMANSKIY, Naum L'vovich; FAL'KOV, Iosif Azraelevich [deceased]; SOKOLOV, Yu.B., nauchnyy redaktor; SHPAYER, A.L., redaktor; PYATAKOVA, N.D., tekhnicheskiy redaktor.

[Manufacture and use of tiles made of cement and sand] Proizvodstvo i primenenie tsementno-peschanoi cherepitsy. Moskva, Gos.izd-vo lit-ry po stroit.materialam, 1957. 103 p. (MIRA 10:11)
(Tiles, Roofing)

CHERNYAK, Yakov Naumovich; SOKOLOV, Yu.B., nauchnyy redaktor; GRIMBERG, S.M., redaktor; PYATAKOVA, N.D., tekhnicheskiy redaktor

[Effective ceramic building materials] Effektivnaia stroitel'naia keramika. Moskva, Gos.izd-vo lit-ry po stroit.materialam, 1957. 501 p. (MLRA 10:8)
(Clay industries)

SILKIN, Pavel Vasil'yevich; SOKOLOV, Yu.B., nauchnyy red.; RIVLIN, Yu.I., red.; BOROVNEV, N.K., tekhn.red.

[Methods for extracting and storing clay in winter] Zimnie sposoby dobychi i khraneniia gliny. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 174 p. (MIRA 13:4)
(Clay)

GAK, B.N., kand.tekhn. nauk; GERVIDS, I.A., kand. tekhn. nauk; GONCHAR, P.D., inzh.; VASIL'KOV, S.G., kand. tekhn. nauk; YEVNEVICH, A.V., kand. tekhn.nauk; KIPTENKO, A.K., inzh.; LUNDINA, M.G., kand. tekhn.nauk; NAUMOV, M.M., kand. tekhn. nauk; PATRIK, S.A., inzh.; POPOV, L.N., kand. tekhn. nauk; ROGOVOY, M.I., inzh.; SEDOV, V.G., inzh.; SOKOLOV, Yu.B., inzh.; FRANCHUK, K.O., inzh.; KHAYKIN, V.Ya., inzh., nauchnyy red.; CHIBUNOVSKIY, N.G., inzh., nauchnyy red.; NOKHRATYAN, K.A., red. [deceased]; GUZMAN, M.A., red.; GURVICH, E.A., red.; BORGVNEV, N.K., tekhn. red.

[Handbook on the production of structural ceramics]Spravochnik po proizvodstvu stroitel'noi keramiki. Moskva, Gosstroiizdat. Vol.3.[Wall and roofing ceramics]Stenovaia i krovel'naia keramika. Pod red. M.M.Naumova i K.A.Nokhratiana. 1962. 699 p. (MIRA 16:1)

(Ceramics) (Building materials industry)

Sokolov, Yu. D.

Sokolov, Yu. D. On a spatial homographic motion of a system of three material points. Doklady Akad. Nauk SSSR (N.S.) 58, 369–371 (1947). (Russian)

The author studies the conditions for the homographic motion of three material particles under forces of mutual attraction. If the forces are meromorphic functions of the masses and distances $m_i m_j f(\Delta_{ij})$ and the motion is not restricted to one plane then $f(\Delta) = A\Delta + B\Delta^{-3}$, $B \neq 0$.

J. Lifshitz (Cambridge, Mass.).

Source: Mathematical Reviews, Vol 9 No. 6

Sokolov, Yu.D.

Sokolov, Yu. D. On the trajectories of the rejection to infinity of three material points moving under the influence of their mutual interaction. Doklady Akad. Nauk SSSR (N.S.) 58, 539–542 (1947). (Russian)

The author considers the motion of three particles P_i of masses m_i ($i=0, 1, 2$) which attract or repel each other, the interaction between P_i and P_j having magnitude $m_i m_j |f(r_k)|$ ($i \neq j \neq k$; $r_k = P_i P_j$) and representing an attraction or repulsion according as f is positive or negative. It is assumed that f is analytic for positive r, continuous for $r=0$, and such that, as r becomes infinite, $\lim r^{1-2\alpha} f(r) = 2\alpha$, where $\alpha > 1$. The problem then considered is the behaviour of a solution defined for $0 \leqq t < t_1$, which fails to be regular at t_1. It is shown that as t approaches t_1 the moment of inertia I of the system about its center of mass either approaches a finite value or becomes infinite. It is shown that in the latter case necessarily $\alpha > 1$.

A special study is made of the case of planar motion. The ratio r_i/I is denoted by p_i and the smallest value p_i by p_m. It is then asserted that if, for $t \to t_1$, I becomes infinite but (1) $\inf p_m > 0$ or (2) $\lim p_m = 0$, then only three cases can arise: (a) $\lim p_0 = \lim p_1 = \lim p_2 = G_1(m_0, m_1, m_2)$, (b) $\lim p_2 = G_2(m_0, m_1, m_2, q)$, $\lim p_0/p_2 = q$, $\lim p_1/p_2 = 1+q$, (c) $\lim p_0 = 0$, $\lim p_1 = \lim p_2 = G_3(m_0, m_1, m_2)$, where it is assumed that $p_0 = p_m$ for t sufficiently close to t_1, G_1, G_2, G_3 denote certain simple algebraic expressions, and q denotes a positive root of a certain algebraic equation. The differential equations are reduced to four first order equations, by an appropriate change of variables, and it is stated that, under appropriate assumptions, the methods of Bol and Cotton can be applied to obtain asymptotic representations of the solutions for large values of I. *W. Kaplan.*

Source: Mathematical Reviews, Vol 4 No. 10

SOKOLOV, Yu. D., professor.

Peculiar trajectories in the generalized "Problème restreint".
Part 1: Collison trajectories . Nauk.zap.Kiev.un. 7 no.4:41-57
'48. (MLRA 10:5)

(Mechanics, Analytic)

SOKOLOV, Yu.D., professor.

Peculiar trajectories in the generalized "Problème restreint". Part 2: Trajectories of unrestricted distance. Nauk.zap.Kiev.un. 7 no.4:61-70 '48. (MLRA 10:5)
(Mechanics, Analytic)

, [illegible]. D.

[illegible], [illegible]. D. "On the asymptotic solution of differential equations," Sbornik trudov ([illegible] Mat.-stroit. [illegible]), Issue 8, [illegible], p. [illegible].

[illegible]: [illegible]-3859, [illegible] 5., (Letopis 'Zhurnal'nykh Statei, No. [illegible], 194[illegible]).

SOKOLOV, Yu.D.

Singular trajectories of a system of material points with forces of interaction depending on reciprocal spacing. Zbir.prats' Inst.mat.AN URSR no.9:62-88 '48. (MLRA 9:9)
(Problem of three bodies)

Sokolov, Yu. D.

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Sokolov, Yu. D. On infinite trajectories of a system of mass points under the influence of their mutual actions. Akad. Nauk Ukrain. RSR. Zbirnik Prac' Inst. Mat. 1948, no. 10, 142–164 (1948). (Ukrainian. Russian summary)

The forces of mutual attraction ($f(r_{ij})<0$) or repulsion ($f(r_{ij})>0$) acting on three mass points are assumed to be equal to $m_i m_j |f(r_{ij})|$, where $f(r)=dF(r)/dr$ is a real analytic function for real positive values of r. This function is finite and continuous for $r=0$ and satisfies the condition $\lim_{r\to+\infty} r^{1-2\alpha} f(r)=2\alpha$ [$\lim_{r\to+\infty} r^{-2\alpha}F(r)=1$, $\alpha>\frac{1}{2}$]. The author shows that, if the motion ceases to be regular at a certain moment $t=t_1$, $I^2=M^{-1}\sum m_i m_j r^2_{ij}$ tends to a limit $I_1^2\geqq 0$, or to $+\infty$ when $t\to t_1$. He investigates the second case and gives the conditions corresponding to infinite trajectories. *W. Jardetzky* (New York, N. Y.).

Source: Mathematical Reviews, Vol. 12, No. 2

SOKOLOV, Yu.D.

Spatial trajectories for the general collision of a system of material points affected by reciprocal forces. Zbir.prats' Inst.mat.AN URSR no.11:3-23 '48. (MLRA 9:9)
(Problem of three bodies)

SOKOLOV, Yu.D.

Spatial motion of a system of three material points preserving constant relations of their relative distances. Zbir.prats' Inst.mat.AN URSR no.11:83-96 '48. (MLRA 9:9)
(Problem of three bodies)

Sokolov, Yu. D

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Sokolov, Yu. D. On the motion of a system of three material points on a straight line. Ukrain. Mat. Žurnal 1, no. 3, 3–40 (1949). (Russian)

The author considers the straight-line motion of three material points with masses m_0, m_1, m_2 attracting (or repulsing) each other according to the forces with moduli

$$m_i m_j |f(r_k)| \quad (i, j, k = 0, 1, 2; i \neq j \neq k),$$

where r_k is the distance between the masses m_i, m_j and $f(r)$ is an analytic function, positive in the case of repulsion and negative in the case of attraction. The author discusses the integrability by quadratures of the equations of motion, double collision between a definite pair of material points at a definite point, while the third material point approaches a definite distinct point, as well as the triple collision at the common center of gravity, taking place at a finite instant under the assumption

$$\lim_{r \to 0} r^{2\alpha+1} f(r) = \pm 2\alpha$$

($\alpha \neq 0$ an arbitrary real number). Moreover the behavior of motion for a boundless increasing of the moment of inertia of the system, assuming that

$$\lim_{r \to \infty} f(r)/r^{2\alpha'-1} = 2\alpha' > 2,$$

is considered. The paper terminates with a discussion of motion in which during a finite time interval the mutual distances of the three points increase indefinitely.

E. Leimanis (Vancouver, B. C.).

Source: Mathematical Reviews, Vol 13 No. 10

SOKOLOV, Yu.D., professor.

Symmetrical case in the three body problem with reciprocal attraction inversely proportional to the cubes of distances. Nauk.zap.Kiev.un.8 no.4:25-46 '49. (MLRA 9:10)

(Problem of three bodies)

SOKOLOV, Yu.D., professor.

Form of the development of functions characterizing motion in the generalized three-body problem in the neighborhood of a singular point. Nauk.zap.Kiev.un. 8 no.4:47-67 '49. (MLRA 9:10)
(Problem of three bodies)

1. SOKOLOV, YU. D.

2. USSR (6[illegible])

4. Mechanics, Celestial

7. Some generalizations of the theorem of T. Banakhevich and P. Pizzetti. Sbor trud Inst Mat AN USSR No 12 1949

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

SOKOLOV, Yu. D.

Sokolov, Yu. D. - "On certain cases of spatial movement in a generalized problem of p bodies", Sbornik trudov In-ta matematiki (Akad. nauk Ukr. SSR), No. 12, 1949, p. 12-21.

SO: U-411, 17 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 20, 1949).

Sokolov, Yu. D.

Sokolov, Yu. D. On a general case of symmetric motion of a system of three material points. Ukrain. Mat. Žurnal 2, no. 3, 7–44 (1950). (Russian)

This paper treats the case of symmetric motion in a space of three material points mutually attracting (or repulsing) according to forces with moduli $m_i m_j |f(r_{ij})|$, $i, j=0, 1, 2$; $i \neq j$. After the discussion of the straight line and homographic motion it is shown that in the general case of a non-homographic motion for an arbitrary $f(r)$ the isosceles triangle $P_2P_0P_1$, formed by the three material points, can only rotate about its altitude or about the axis parallel to its base through the center of inertia of the system. The cases of integrability of the equations of motion in elementary and elliptic functions are given. In the second part of the paper double and triple collisions, unlimited recession in a finite time of the moving points and the analytical representation of the solutions in the neighborhood of $r=0$ and $r=\infty$ under some restrictions on $f(r)$ are discussed.

E. Leimanis (Vancouver, B. C.).

Source: Mathematical Reviews, Vol 13 No.1.

Sokolov, Yu. D.

Sokolov, Yu. D. On rectilinear motion with a common collision of a system of three material points mutually attracting according to an exponential law. Ukrain. Mat. Žurnal 2, no. 4, 18–24 (1950). (Russian)

The modulus of the law of attraction specified in the title is $g^2m_im_je^{a/r_k}$ ($i, j, k=0, 1, 2$; $i\neq j\neq k$), g^2 and a being positive constants. The case of a triple collision, taking place at a finite instant is investigated and the corresponding analytical representation is discussed. *E. Leimanis.*

Source: Mathematical Reviews, Vol 13 No. 10

Sokolov, Yu. D.

Sokolov, Yu. D. On the motion on a straight line of a system of three material points, each acting with forces proportional to the logarithms of their mutual distances. Ukrain. Mat. Žurnal 2, no. 4, 25–36 (1950). (Russian)

The rectilinear motion of the three points, mutually attracting or repulsing, is assumed to take place under the action of the forces with moduli $g'm_im_j|\ln r_k/a|$ $(i, j, k=0, 1, 2; i\neq j\neq k)$. Double collision between a definite pair of the points and the triple collision taking place at a finite instant are considered and the corresponding analytical representations are discussed. *E. Leimanis* (Vancouver, B. C.).

Source: Mathematical Reviews, Vol 13 No. 10

SOKOLOV, Yu.D.

Integration in elliptic functions of equations of rectilinear motion of three equal masses interacting with forces proportional to the cubes of their relative distances. Dop.AN URSR no.6: 423-431 '50. (MLRA 9:8)

1. Chlen-korespondent Akademii nauk Ukrains'koi RSR; 2. Institut matematiki Akademii nauk Ukrains'koi RSR.
(Problem of three bodies)

SOKOLOV, Yu.D.

Study of the qualitative and analytical theory of differential equations in dynamics. Nauk.zap.Kiev.un.9 no.9:29-40 '50. (MLRA 9:10)
(Differential equations) (Problem of three bodies)

SOKOLOV, Yu.D.

Integration in elliptic functions of equations for the rectilinear motion of three equal masses interacting with forces directly proportional to the cubes of their distances. Nauk.zap.Kiev.un.9 no.9:41-49 '50. (MLRA 9:10)

(Problem of three bodies)

SOKOLOV, Ya. D.

5

⊖397. Sokolov, Yu. D., Singular trajectories of a system of free material points (In Russian), Monograf. Institutu Matematiki, vyp. 1. Akad. Nauk Ukrain. SSR, Kiev, 1951, 128 pp. 6 rubles.

For the qualitative treatment of dynamical questions, investigation of singular points and singular trajectories of equations of dynamical origin is of the highest importance. Author considers the singular trajectories of a system of n (≥ 3) particles P_i of masses m_i ($i = 1, 2, \ldots, n$), which attract or repel each other, the interaction between P_i and P_j ($i \neq j$) having magnitude $m_i m_j |f(r_{ij})|$ and representing an attraction or repulsion according as f is negative or positive. It is assumed that $f(r)$ is analytic for positive r and may have singularities at the points $r = 0$ and $r = \infty$ on the real axis.

The monograph consists of four chapters. Chap. I contains some general remarks concerning the regular motion of the system and the singularities of the integrals of motion. In chap. II, trajectories of double collision ($\lim_{t \to t_1} J^2 = J_1^2 > 0$, where J^2 is the moment of inertia of the system about its center of mass) in the generalized bodies problem are considered, assuming that

$$\lim_{r \to 0} r^{2+\delta} f(r) = -2\alpha < 0 \qquad [1]$$

Chap. III is concerned with trajectories of general collision ($\lim_{t \to t_1} J^2 = 0$) under the assumption [1]. Finally, chap. IV deals with the case when the particles recede indefinitely far from each other ($\lim_{t \to t_1} J^2 = \infty$). It is assumed that $f(r)$ is analytic for positive r, continuous for $r = 0$, and increases indefinitely as $r \to \infty$ in such a way that $\lim_{r \to \infty} r^{1-2\beta} f(r) = 2\beta > 0$.

With the publication of this monograph, a certain period of work (1931–1951) of the author on the problem stated in the beginning may be considered as finished. E. Leimanis, Canada

SoKoLov, Yu. D

2

1/2

Sokolov, Yu. D. On some general characteristics of the behavior of a material system in the neighborhood of a singular instant of time. Dopovidi Akad. Nauk Ukrain. RSR 1951, 227–233 (1951). (Ukrainian. Russian summary)

Consider a system of n (≥ 3) particles P_i of masses m_i ($i=1, 2, \cdots, n$), which attract or repel each other, the interaction between P_i and P_j ($i \neq j$) having magnitude $m_i m_j |f(r_{ij})|$ and representing an attraction or repulsion according as f is negative or positive. It is assumed that $f(r)=dF(r)/dr$ is analytic for positive r and may have singularities at the points $r=0$ and $r=\infty$ on the real axis. The following theorems are established. Theorem 1. If the motion is regular up to but not including the instant t_1, then $\lim_{t \to t_1} \min(\underline{r}, 1/\bar{r})=0$, where $\bar{r}$ and $\underline{r}$ are the greatest and smallest of the mutual distances between the particles at the instant t. Theorem 2. Assume that $f(r)$ is holomorphit for $-\delta<\arg r<+\delta$, its modulus is bounded for $|r|>d>0$ and $F(r)$ is bounded above in the interval $r=d>0$ and $r=+\infty$. Then $\lim_{t \to t_1} \underline{r}=0$. Theorem 3. Assume that the ratio U/I^2 is bounded above for all sufficiently large values of I^2. Then $\lim_{t \to t_1} \underline{r}=0$. Here U and I^2 denote the force function $U=\sum m_i m_j F(r_{ij})$ and the moment of inertia of the system about its center of mass $I^2=M^{-1}\sum m_i m_j r_{ij}^2$; M is the total mass. Theorem 4. Let x_i, y_i, z_i (coordinates of the particles with respect to the center of mass) be holomorphic functions for all values of t in the interval $t=0$ to $t=t_1$, except at t_1 itself, and let $f(r)/r$ be a holomorphic function of r^2 for $r^2=0$. Then $\lim_{t \to t_1} \bar{r}=+\infty$.

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Sokolov, Yu. D.

Further, on the basis of the generalized Lagrange-Jacobi equality and some supplemental assumptions, the behaviour of $\bar{I}^2$ as $t \to t_1$ or $t \to +\infty$ is investigated [cf. Sokolov, Singular trajectories of a system of free material points, Akad. Nauk Ukrain. SSR, Kiev, 1951; these Rev. 14, 910].

E. Leimanis (Vancouver, B. C.).

1. SOKOLOV, YU, D.

2. USSR (600)

4. Vector Analysis

7. Some space trajectories in a generalized asteriodal problem. Dop. AN URSR No. 2, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

Mathematical Reviews
Vol. 15 No. 2
Feb. 1954
Astronomy

Sokolov, Yu. D. On a case of integrability of the equations of symmetric motion of a system of three material points. Ukrain. Mat. Žurnal 3, 347–380 (1951). (Russian)

This paper is a continuation of an earlier one by the same author [same Žurnal 2, no. 3, 7–44 (1950); these Rev. 13, 996]. Consider a system of three particles P_i of masses m_i $(i=0, 1, 2)$, which attract or repel each other, the interaction between P_i and P_j $(i \neq j)$ having magnitude $m_i m_j |f(r_{ij})|$ and representing an attraction or repulsion according as f is negative or positive. Further assume that $f(r)=Ar+B/r^3$, where A and $B \neq 0$ are arbitrary numbers. Let $m_1=m_2$ and let the initial conditions at $t=0$ be chosen in such a way that the triangle $P_1P_0P_1$ remains isosceles during the whole motion. It was shown that the only possible types of motion of this triangle are: (i) rotation about the axis parallel to its base through the center of inertia of the system, (ii) rotation about its axis of symmetry (altitude), and (iii) planar motion in which P_0 moves along a fixed straight line while the particles P_1 and P_2 describe trajectories which are symmetric with respect to this line. A complete discussion in terms of elliptic functions of these possible cases of the relative motion is given. Some of the results obtained generalize certain earlier results of P. V. Voronec [Universitetskiya Izvestiya, Kiev 47, nos. 1, 2, Čast' II, 180+iii pp. (1907)]

E. Leimanis.

Celestial mechanics

SOKOLOV, Yu.D., chlen-korrespondent.

Some general characteristics of the behavior of a material system in the vicinity of a particular moment. Dop.AN URSR no.4:227-233 '51. (MLRA 6:9)

1. Akademiya nauk Ukrayins'koyi RSR. 2. Instytut matematyky Akademiyi nauk Ukrayins'koyi RSR. (Aggregates)

Sokolov, Yu. D.

Sokolov, Yu. D. On the flow of ground water into a drainage ditch of trapezoidal section. Akad. Nauk SSSR. Prikl. Mat. Meh. 15, 683–688 (1951). (Russian)

This is an extension and correction of an earlier treatment of the same problem [Polubarinova-Kočina and Fal'kovič, same journal 11, 629–674 (1947); these Rev. 10, 73; translated in Advances in applied mechanics, v. 2, pp. 153–225, Academic Press, New York, 1951; cf. these Rev. 12, 764].

H. P. Thielman (Ames, Iowa).

Source: Mathematical Reviews, Vol 13 No. 4

SOKOLOV, Yu. D.

"Calculation of the Filtration from a Channel Trapezoidal in Cross Sections," Dokl. AN SSSR, 79, No.5, 1951

Inst. of Mathematics, AS USSR

Translation U-2521, 24 Oct 52

SOKOLOV, YU. D

Mathematical Reviews
Vol. 15 No. 1
Jan. 1954
Mechanics

Sokolov, Yu. D. **Filtration without backwater from an unlined canal of trapezoidal section in homogeneous ground.** Ukrain. Mat. Zurnal 4, 65-96 (1952). (Russian)

A canal of trapezoidal cross-section is cut in a layer of soil of low permeability (such as clay) which overlies a layer of greater permeability (sand or gravel). Characteristics of the flow are found by the method of conformal mapping, the development being complicated but straightforward. Work is carried out in considerable detail. Water loss from the canal is determined by approximate numerical methods for several cross-sections when the depth of the layer of clay is infinite, and also for chosen finite depths of the clay layer.

R. E. Gaskell (Seattle, Wash.).

SOKOLOV, Yu.D., chlen-korrespondent.

Pressureless inflow of ground water to the drainage gallery in the presence of infiltration. (First phase of non-stationary movement). Dop.AN URSR no.4: 251-257 '52. (MLRA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR. 2. Instytut matematyky Akademiyi nauk Ukrayins'koyi RSR. (Water, Underground) (Soil percolation)

SOKOLOV, Yu.D.

Pressureless inflow of ground water to the drainage gallery in the presence of infiltration. Dop.AN URSR no.5:364-369 '52. (MLRA 6:10)

1. Instytut matematyky Akademiyi nauk Ukrayins'koyi RSR.
(Water, Underground) (Soil percolation)

SOKOLOV, Yu.D.

Pressureless inflow of ground water to the drainage gallery through an inclined water stop. (First phase of irregular movement). Dop.AN URSR no.5:370-376 '52. (MLRA 6:10)

1. Instytut matematyky Akademiyi nauk Ukrayins'koyi RSR.
(Water, Underground)

SOKOLOV, Yu.D., chlen-korrespondent.

Inflow of ground water to the drainage gallery through an inclined water stop and the presence of infiltration. First phase of irregular motion. Dop.AN URSR no.6:439-446 '52. (MLRA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR. 2. Instytut matematyky Akademiyi nauk Ukrayins'koyi RSR. (Water, Underground) (Soil percolation)

SOKOLOV, YU. D.

USSR/Geophysics - Ground Water

Jan 53

"Headless Flow of Ground Water Toward a Drainage Gallery for an Inclined Line of Water Resistance (Second Phase of Nonstationary Motion)," Yu. D. Sokolov Corr Mem, Acad Sci Ukrainian SSR, Inst of Math, Acad Sci Ukrainian SSR

"Dopovidi Ak Nauk Ukrains'koi RSR" No 1, pp 3-6

Applies approximate method of successive shift of stationary states to the investigation of the secondary phase (drainage of layers) of nonstationary motion in the problem of nonstationary two-dimensiona

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(unilateral) flow of ground waters toward a drainage gallery, where it is assumed that the boundary between the permeable and impermeable layers is inclined to the horizontal.

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SOKOLOV, Yu. D.

Mathematical Reviews
May 1954
Mechanics

Sokolov, Yu. D. On a problem of the theory of unsteady motion of ground water. Ukrain. Mat. Zurnal 5, 159–170 (1953). (Russian)

This paper contains short expositions of several approximate methods of solving the problem of water flow into a rectangular trench whose bottom rests on an infinite horizontal impermeable layer, and whose water level is suddenly lowered from $h=H$ to $h=kH$, while the surrounding soil is saturated. The author is concerned with both flow rate and the curve of depression of the water surface. In his first method, the Boussinesq equation $h_t=(hh_x)_x$ is transformed into the ordinary differential equation $uu''+(u')^2+2\eta u'=0$ through the transformation $h=ukH$, $\eta=x/2(kt)^{\frac{1}{2}}$, which is then solved by the perturbation method. In the author's second method, the level beyond some abscissa, $x=l$, is assumed "fixed" while $h(x)$ and the flow rate are found, then $l(t)$ is determined from these, with the help of the continuity condition. His third method is similar. A Fourier series method is used to solve a second problem, similar to the first but with an impermeable vertical wall placed at $x=L$.

R. E. Gaskell (Seattle, Wash.).

SOKOLOV, Yu.D.; KAPLAN, Ya.L., redaktor; POLITIENKO, S.R., tekhnicheskiy redaktor.

[Elements of the theory of functions] Elementy teorii funktsii kompleksnoi zminnoi. Kyiv, Derzh.uchbovo-pedahoh. vyd-vo "Radians'ka shkola," 1954. 202 p. [Microfilm] (MIRA 8:2)
(Functions of complex variables)

RAPOPORT, Il'ya Markovich; SOKOLOV, Yu.D., redaktor; KHARITONSKIY, M.B., redaktor; KRYLOVSKAYA, N.S.tekhnicheskiy redaktor

[Some asymptotic methods in the theory of differential equations] O nekotorykh asimptoticheskikh metodakh v teorii differentsial'nykh uravnenii. Kiev, Izd-vo Akademii nauk Ukrainskoi SSR, 1954. 287 p. (MLRA 8:3) [Microfilm]

1. Chlen-korrespondent AN USSR (for Sokolov)
(Asymptotes) (Differential equations, Linear)

SOKOLOV, Yu.D.

Pressureless radial inflow of ground water into a well with existing infiltration. Ukr.mat.zhur. 6 no.1:58-80 '54.
(Soil percolation) (MLRA 9:1)

SOKOLOV, YU. D.

3

Sokolov, Yu. D. On the theory of plane unsteady filtration of ground waters. Ukrain. Mat. Ž. 6 (1954), 218–232. (Russian)

The present work is a continuation of the author's previous investigations [cf. Dopovidi Akad. Nauk Ukrain. RSR 1952, nos. 4, 5; Ukrain. Mat. Ž. 5 (1953), 169–170; MR 15, 476]. The work contains a mathematical analysis of the unsteady filtration of ground water. The non-linear equation (cf. J. Boussinesq, Journ. Math. Pures. Appl., ser. 5, 10, f. 1, 1906) in question is written in the form

$$\frac{\partial h}{\partial t}=\left(\frac{c}{2\mu}\right)\frac{\partial^2 h^2}{\partial x^2}+\frac{w}{\mu},$$

where h denotes the water-level at time t, c is the coefficient of filtration, μ is the coefficient of waterflux, and w is the intensity of infiltration. This equation is subjected to the conditions $h(x, 0)=H_0=$ const $(0\leq x\leq L)$, and $h(0, t)=h_a<H_0$, $(\partial h/\partial x)_{x=L}=0$ (L is the length of the drainage system, measured along the x-axis). The problem is decomposed into a depression zone and a layer.

Sokolov, Yu. D.

The author solves this problem, approximately, by means of the method of the stationary phase. The analysis is somewhat complicated, but elegant and straightforward. (The approximations seem to be reasonable.)

K. Bhagwandin (Oslo).

Sokolov, Yu. D. On an axially symmetric problem of the theory of unsteady motion of ground water. Ukrain. Mat. Ž. 7 (1955), 101–111. (Russian)

In this paper the author considers the unsteady filtration through a ground layer. The equation and the appropriate initial- and boundary-conditions are virtually the same as in the paper reviewed above. The analysis is also similar.

K. Bhagwandin (Oslo).

Sokolov, Yu. D.

1-F/W

Sokolov, Yu. D. On a method of approximate solution of linear integral and differential equations. Dopovidi Akad. Nauk Ukrain. RSR 1955, 107–111. (Ukrainian. Russian summary)

This paper presents a new method for the approximate solution of linear integral and differential equations, different from the usual integrating process. The convergence of the method is proved and an estimate of the error established. Two examples are given applying the method to a one-dimensional boundary problem for a linear differential equation of second order and one example applying it to the case of a nonlinear equation of the second order. *W. E. Milne* (Corvallis, Ore.).

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Inst. Math, AS UkrSSR

SOKOLOV, YU.D.

2

Sokolov, Yu. D. On the determination of dynamic pull in shaft-lifting cables. Akad. Nauk Ukrain. RSR. Prikl. Meh. 1 (1955), 23–35. (Ukrainian. Russian summary)

This paper contains a detailed discussion of the basic partial differential equation

$$\frac{g}{q}\frac{\partial T}{\partial x}-v^2\frac{\partial^2 u}{\partial x^2}=\frac{\partial^2 u}{\partial t^2}+2v\frac{\partial^2 u}{\partial x\,\partial t}-v\left(\frac{\partial^2 u}{\partial x\,\partial t}\right)_{x=0}+\frac{dv}{dt}-g$$

for a lifting cable as obtained by G. N. Savin [Dopovidi Akad. Nauk Ukrain. RSR 1954, 140–147] under the assumption that

$$T(x,t)=K\frac{\partial u}{\partial x}+\alpha\frac{\partial^2 u}{\partial x\,\partial t},$$

where α characterizes damping of the dynamic pull in the cable and K denotes a constant. Otherwise the paper follows along the lines outlined in a previous paper by the same author [ibid. 1955, 21–25; MR 17, 307].

E. Leimanis (Vancouver, B.C.)

1-F\W

SOKOLOV, Yu.D.

Axially symmetric problem in the theory of unsteady flow of underground water. Ukr.mat.zhur. 7 no.1:101-111 '55. (MLRA 8:7)
(Soil percolation)

124-57-2-1928 D

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 64 (USSR)

AUTHORS: Sokolov, Yu., D.

TITLE: Investigation of the Efficiency of a Hydraulic Ram as a Function of the Supply Head, the Pressure-check-valve Loading, and the Length of the Drive Pipe (Issledovaniye k.p.d. gidravlicheskogo tarana s izmeneniyem vysoty nagnetaniya, nagruzki udarnogo klapana i dliny udarnoy truby)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Vses. n.-i. in-t gidrotekhn. i melior. (All-Union Scientific Research Institute for Hydraulic Engineering and Reclamation), Moscow, 1956.

ASSOCIATION: Vses. n.-i. in-t gidrotekhn. i melior. (All-Union Scientific Research Institute for Hydraulic Engineering and Reclamation), Moscow

1. Hydraulic systems--Analysis 2. Hydraulic rams--Performance

Card 1/1

124-11-12924

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p 92 (USSR)

AUTHOR: Sokolov, Yu. D.

TITLE: On Certain Special Solutions of Boussinesque's Equation. (O nekotorykh chastnykh resheniyakh uravneniya Bussineska)

PERIODICAL: Ukr. matem. zh., 1956, Vol 8, Nr 1, pp 54-48 (sic!)

ABSTRACT: The beginning of the paper gives a detailed explanation for the known special solution of Boussinesque's equation, obtained by separating the variables. In addition, the Author obtains by other means solutions of the type of the instantaneous source published by G. I. Barenblatt (Prikl. matem. i mekhanika, 1952, Vol 16, Nr 1). The A. shows that in Barenblatt's paper the solution is not given properly. What is actually evolved is an investigation of the single general problem of the accurate solutions of the equation of motion of gases in a porous medium; therein the expression of the equation under scrutiny in terms of the coordinate of the moving boundary of the influence sector is correct, whereas in the expressions of that coordinate in the cylindrical case a power of two is omitted in the index in the denominator.

In the concluding portion of the subject paper, solutions of the type

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On Certain Special Solutions of Boussinesque's Equation (continued).

$f(Ax + By + Ct)$ are examined; these solutions have been investigated for more general problems by G. I. Barenblatt (Prikl. matem. i mekhanika, 1953, Vol 17, Nr 6; Ref. Zhurnal, Mekhanika, 1956, No. 9, 6088).
Bibliography: 5 references. (G. K. Mikhaylov)

Card 2/2

SOKOLOV, Yu.D. (Kiyev)

Method of averaging functional corrections (with summary in French).
Uk- -at.zhur. 9 no.1:82-100 '57. (MLRA 10:5)

1.Institut matematiki AN USSR.
(Approximate computation)

SOKOLOV, Yu.D.; BONDARCHUK, O.S.; LAVRINENKO, P.P.; SAVITS'KIY, M.I.

"Course of theoretical mechanics" by H.M.Savin, M.I.Kil'chevskyi, and T.V.Putiata. Reviewed by IU. D.Sokolov and others. Prikl. mekh. 4 no. 2:234-236 '58. (MIRA 11:8)

(Mechanics--Textbooks)
(Savin, H.M.)
(Kil'chevskyi, M.I.)
(Putiata, T.V.)

AUTHOR: SOKOLOV, Yu.D. and POGREBYSSKIY, I.B. 41-1-14/15

TITLE: Iosif Zakharovich Shtokalo (On his 60 th Birthday) (Iosif Zakharovich Shtokalo (k shestidesyatiletiyu so dnya rozhdeniya)

PERIODICAL: Ukrainskiy Matematicheskiy Zhurnal,1958,Vol.10,Nr 1, pp. 105 - 106 (USSR)

ABSTRACT: Course of life and appreciation of the Ukrainian mathematician, member of the Ukrainian Academy of Sciences I.Z. Shtokalo . His essential scientific contribution: Stability investigation of linear differential equations with quasi-periodical coefficients.

AVAILABLE: Library of Congress

1. Differential equations-Solutions-Stability

Card 1/1

SOV/41-10-2-7/13

AUTHOR: Sokolov, Yu.D.

TITLE: On an Approximative Solution of Linear Integral Equations of the Volterra Type (O priblizhennom reshenii lineynykh integral'nykh uravneniy tipa Vol'terra)

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1958, Vol 10, Nr 2, pp 193-208 (USSR)

ABSTRACT: For the solution of the equation

$$(1) \qquad y(x) = \varphi(x) + \int_a^x K(x,\xi)y(\xi)\,d\xi \ ,$$

where $\varphi(x)$ and $K(x,\xi)$ are continuous in $a \leqslant \xi \leqslant x \leqslant a+h \leqslant a+H$ and where

$$h - \int_a^{a+h} dx \int_a^x K(x,\xi)d\xi > 0 \ ,$$

the author proposes a combination of successive approximation and of average formation; as the n-th approximation he applies

$$y_n(x) = \varphi(x) + \int_a^x K(x,\xi)\left[y_{n-1}(\xi) + \alpha_n\right]d\xi \ ,$$

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On an Approximative Solution of Linear Integral Equations of the Volterra Type

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where

$$\alpha_n = \frac{1}{h}\int_a^{a+h} \delta_n(x)dx \qquad (\delta_n = y_n - y_{n-1} \quad , \quad \delta_1 = y_1)$$

The same method applies also to the multidimensional case. The convergence of the method is proved and eight examples are calculated in detail.
There are 8 tables, and 3 references, 2 of which are Soviet, and 1 German.

ASSOCIATION: Institut matematiki Akademii nauk USSR (Institute for Mathematics of the Academy of Sciences of the Ukrainian SSR)

SUBMITTED: January 7, 1958

1. Linear equations 2. Integral equations 3. Approximate computation

Card 2/2

SOV/41-10-4-8/11

16(1)
AUTHOR: Sokolov, Yu.D. (Kiyev)

TITLE: On an Approximation Method for the Solution of Nonlinear Integral Equations With Variable Boundaries (Ob odnom metode priblizhennogo resheniya nelineynykh integral'nykh uravneniy s peremennymi predelami)

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1958, Vol 10, Nr 4, pp 419-433 (USSR)

ABSTRACT: Given the equation

$$(1) \qquad y(x) = \varphi(x) + \int_a^x K(x,\xi) f[x,\xi,y(\xi)]\, d\xi,$$

where $\varphi(x)$ is continuous on $a \leq x \leq a+h \leq a+H$, $K(x,\xi)$ is continuous for $a \leq \xi \leq x \leq a+h \leq a+H$ and $f(x,\xi,y)$ is continuous in $a \leq \xi \leq x \leq a+h \leq a+H$, $-M+\varphi \leq y \leq M+\Phi$; $\varphi = \varphi_{min}$, $\Phi = \varphi_{max}$ and besides $|f(x,\xi,y) - f(x,\xi,\bar{y})| \leq A|y-\bar{y}|$. As the first approximation the author commends

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$$(2) \qquad y_1(x) = \varphi(x) + \int_a^x K(x,\xi) f(x,\xi,\alpha_1) \, , \quad \alpha_1 = \frac{1}{h} \int_a^{a+h} y_1(x)dx \, ,$$

then the roots $\alpha_1^{(i)}$ resulting from it are determined, one of these roots is chosen and in the n-th step it is put:

$y_n(x) = \varphi(x) + \int_a^x K(x,\xi) f\left[x,\xi,y_{n-1}(\xi) + \alpha_n\right] d\xi$, where α_n is one of the roots found in the preceding step. Sufficient conditions for the convergence of the method are given. Applications to the multi-dimensional case are proposed. Seven examples are calculated.
There are 8 references, 6 of which are Soviet, 1 American, and 1 English.

SUBMITTED: July 1, 1958
Card 2/2

SOKOLOV, Yu.D.

Fundamental works of Leonhard Euler in the domain of infinitesimal calculus and in the theory of numbers. Ist.-mat. zbir. 1:5-19. '59. (MIRA 14:2)

(Calculus) (Numbers, Theory of)

SOV/41-11-1-1/12

AUTHOR: Sokolov, Yu.D. (Kiyev)

TITLE: Investigations on the Theory of Singular Trajectories of a System of Free Material Points

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1959, Vol 11, Nr 1, pp 3-15 (USSR)

ABSTRACT: This is a survey on the most essential results (western and Soviet ones) on the considered domain of celestial mechanics. Especially the author treats the results obtained during the years 1921-33 by the committee of Applied Mathematics of the AS Ukr.SSR and from 1934 up to now by the Institute of Mathematics of the AS Ukr.SSR. It is stated that almost all results of Siegel (Ann. of Math. (2), 42) have been published by Yu.D.Sokolov already in 1928. The author mentions the following Russian and Soviet scientists: F.Bludskiy, S. Kovalevskaya, M.Kiveliovich, D.Goryachev, and P.V.Voronets. No new results are given.

SUBMITTED: October 14, 1958

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C111/C333

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AUTHOR: Sokolov, Yu.D.

TITLE: On the Application of the Method of Averaging of Functional Corrections to Parabolic Differential Equations Which are Linear Relative to the Derivatives

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1960, Vol. 12, No. 2, pp. 181-195

TEXT: The method explicitly described by the author in (Ref. 1-5) is used for the approximative solution of the mixed integral equation

$$(1) \quad u(x,t) = \varphi(x,t) + \int_0^t \int_a^b K(x,t;\xi,\tau) f[x,t;\xi,\tau;u(\xi,\tau)]\, d\xi\, d\tau,$$

where $\varphi(x,t)$, $K(x,t;\xi,\tau)$ and $f(x,t;\xi,\tau;u)$ are continuous and f moreover satisfies a Lipschitz condition in u, as well as for the solution of parabolic equations

$$(26) \quad \frac{\partial u}{\partial t} - a^2 \frac{\partial^2 u}{\partial x^2} = f(x,t,u).$$

Here the author takes

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On the Application of the Method of Averaging of Functional Corrections to Parabolic Differential Equations Which are Linear Relative to the Derivatives

$$(4_1) \quad u_1(x,t) = \varphi(x,t) + \int_0^t \int_a^b K(x,t;\xi,\tau) f(x,t;\xi,\tau;\alpha_1)\,d\xi\,d\tau \quad \text{with}$$

$$(5_1) \quad \alpha_1 = \frac{1}{hT} \int_0^T \int_a^b u_1(x,t)\,dx\,dt$$

as first approximation and in general it is put

$$(4_n) \quad u_n(x,t) = \varphi(x,t) + \int_0^t \int_a^b K(x,t;\xi,\tau) f\left[x,t;\xi,\tau,u_{n-1}(\xi,\tau)+\alpha_n\right] d\xi\,d\tau \quad \text{with}$$

$$(5_n) \quad \alpha_n = \frac{1}{hT} \int_0^T \int_a^b \left[u_n(x,t)-u_{n-1}(x,t)\right] dx\,dt .$$

The author gives conditions under which the method converges, and the error of the method is estimated. Several examples are given. A.Yu.Luchka is mentioned by the author. There are 3 tables, and 8 Soviet references.

SUBMITTED: November 3, 1959

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